

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. VIII

JANUARY, 1937

No. 7



Euphorbia splendens Bojer.

Known in all parts of the world as The Crown of Thorns. The bright flowers make it one of the most attractive of the Euphorbias.



CACTUS AND SUCCULENT JOURNAL

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Vol. VIII

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JANUARY MEETING OF CACTUS AND SUCCULENT SOCIETY

January 21st at 7:30, one of the finest meetings of the year will be held at the Pasadena Public Library, 285 E. Walnut St. Dr. H. J. Webber of Riverside will speak on "Bizarre and Economic Plants of the Karroo Desert." This lecture is based on his personal observations and promises to be most informative. Society members and their friends should attend this meeting. Let's demonstrate that Pasadena is interested in the other Succulents as well as Cacti.

OKLAHOMA NOTES

The Cactus and Succulent Society of Oklahoma held their annual election of officers, Dec. 3, 1936. The following named officers were elected to serve the coming year:

Mrs. Jesse Vandenberg, *President*.

Mr. R. A. Chubb, *Vice-President*.

Mrs. Jessie L. Seela, *Secretary and Treasurer*.

The Third Thursday in December is the one social

meeting of the year. Although the weather turned a little inclement, about thirty members met at the home of Mr. and Mrs. R. A. Chubb, then loaded in cars and drove ten miles to the home of Mrs. Jessie L. Seela. We were welcomed by a blazing bonfire. Owing to the cold, we spent very little time outdoors, but around roaring wood fires inside, spent a very pleasant—no hilarious would be a better word—evening. Although the ages ranged from twelve to seventy, it was a wholly harmonious meeting, and after refreshments, topped by a prickly pear made of gum drops and broomstraws, we adjourned, determined to accomplish more the next year than we had in the past.

MRS. JAS. H. HYDE.

WANTED

Send in your experiences in growing Succulents. Now there is space for the articles which will be written for the many amateurs. The articles in this issue will give an idea of what can be used. We especially welcome articles on culture, propagation, glass houses, and articles on the other succulents.

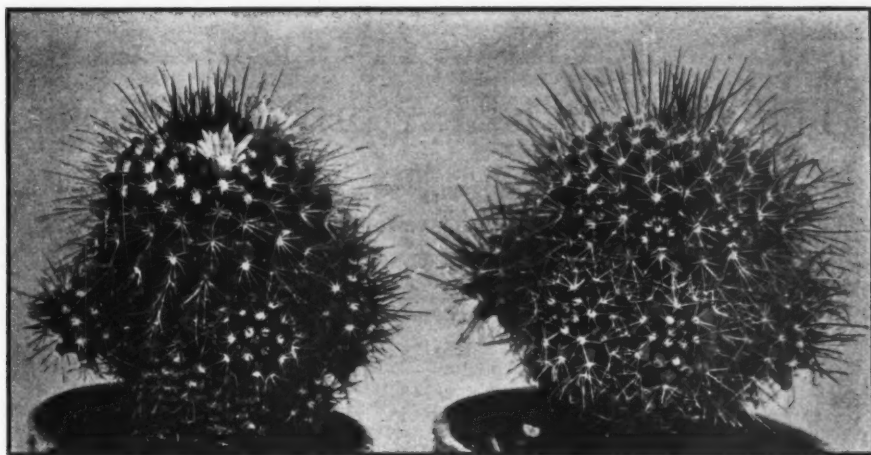
BRITTON AND ROSE REPRINT

Did you receive a price-list of the two editions now being published? If not write for one now so that you can take advantage of the special discount allowed Society members. Jan. 31st is the final day that this offer remains open.

The many encouraging returns have swamped your Editor but each reply will be answered with complete information.

Some have hesitated because of the misunderstanding as to credit terms for those who wish to complete their set but cannot pay cash. The main object of this work is to make available a set of "THE CACTACEAE" for every cactus lover. There is no extra charge for credit but we ask that you submit terms that are painless to you and that they are such that statements, reminders, etc., will be unnecessary. Order your set now. They are being reprinted for YOU.

S. E. H.



Mamillaria gatesii sp. nov.

By MARCUS E. JONES

Planta profundis interdum caespitosis, globularibusve, subcylindricis, 15 cm. latis, 20 cm. altis; tuberculis elongatis, 15 mm. longis, compressis, 15 mm. latis, azureo-viridis, lactatis, albo-tomentosis in axillis prorsis; areolis circularibus, albo-tomentosis jucundis; spinis radialibus 8, 1 cm. longis, acicularibus, patentibus, crocatis ad apicem, nigram convenientibus albis adumbratibus; spinis centrali una, 3 cm. longa, robusta, acicular, nigro-purpurea, umbraticanti crocato-fusca ad basi; fructus coccineo breviter clavati, 15 mm. longus, nudus; semen punctatum, nigrum-fuscum, 1 mm. longus. Typo Gates numero 128 in Herbario Dudleyi, Stanford University, Calif.

Plants deep seated, sometimes caespitose, globular to sub-cylindric, 10 to 15 cm. in diameter by 20 cm. tall; tubercles elongated to 15 mm., flattened to 15 mm. wide, blue-green, milky; axils white woolly throughout; areoles circular, white woolly in youth; radial spines 8, 1 cm. long, acicular, spreading, yellow with dark tips becoming white; central spines 1, 3 cm. long, stout, acicular, dark purple shading to yellow-brown at base; flowers from upper part of plant, campanulate, 16 mm. high by 2 cm. wide; outer perianth segments ovate-lanceolate, margins often ciliate, greenish yellow with purplish midrib; inner perianth segments broadly acuminate, margins lacerate, golden to greenish yellow; style light green; stigma lobes 5, light green; filaments numerous, light yellow, anthers light yellow; fruit red, short clavate 15 mm. long, naked; seed dark brown, punctate, 1 mm.

Type collected on steep coastal hillsides midway between Cape San and San Jose del Cabo,

Baja California, (Lat. 22 degrees 58' N., Long. 109 degrees 50' W.), Mar. 15, 1933. Named for the discoverer, Howard E. Gates, Anaheim, Calif., who has made many long exploration trips in Lower California.

The distribution is apparently confined to a narrow, hilly coastal area between Cape San Lucas and San Jose del Cabo in conjunction with *Cereus* (*Lemaireocereus*) *littoralis* Mrs. Brandegee, *Bartschelia schumannii* Br. & R. and *Neomammillaria peninsularis* Br. & R.

This species is apparently close to *N. petrophila* from which it differs in the following characteristics: does not cluster as freely, has longer and more conical tubercles, longer and stouter spines, punctate not smooth seeds, a low coastal habitat instead of the high mountains. In the wild this species seldom forms more than three branches, but under cultivation it clusters very freely. It is the longest spined of the known Lower California Neomammillarias.

Illustrated Notes in Crassulaceae

THOMPSONELLA Britton & Rose

By ERIC WALTHER, Botanist, Golden Gate Park

The most interesting and valuable discovery of the writer's two Mexican field explorations has proven to be that of the two known species of *Thompsonella*. This genus is one of the numerous segregates from *Echeveria* established by Britton & Rose; and was first published in "Contributions from the National Herbarium," Vol. 12:9; 391, 1909. Of the two species there described, one had previously been published, on the basis of dried specimens alone, as *Echeveria minutiflora*; and one glimpse of a flowering plant suffices to justify its generic separation. This is stated to range through Puebla and Oaxaca; and we collected living plants near Atlixco, between the city of Puebla and the southeasterly slopes of Popocatepetl, on the exceedingly dry foothills at the latter's base. (*1)

While our plants, as grown in the greenhouses of Golden Gate Park, disagree slightly with the description and picture given by Dr. Rose, l.c., we feel disinclined to create another species on such slight variations.

Thompsonella platyphylla Rose, the other species here illustrated, was found by us in October 1935, in the "Cañon de la Mano," near Iguala, presumably its type-locality. Plants now flowering in the Park collections, while having a short stem and leaves deeply concave above, otherwise agree with Dr. Rose's description and picture.

The name "*Thompsonella*" commemorates Mr. Charles Henry Thompson of the Missouri Botanic Garden, who first brought *T. minutiflora* into cultivation. The genus is clearly distinct from *Echeveria* in its thyrsoid inflorescence, small flowers, rotately spreading petals, slender carpels stipitate at base, thinnish nectaries, etc. Because of the lateral inflorescence it should be placed near *Graptopetalum*, and is probably the latter's nearest ally, differing primarily in the thyrsoid inflorescence, the always basal leaves, the continuous nature of the petal-coloration and last, but not least, the lack of any foetid scent to the pollen.



Thompsonella minutiflora (Rose) Britt. & Rose, flowering plant, app. x 0.2.

Aside from the basal leaf-rossette from which the scape arises laterally, the inflorescence is strongly reminiscent of that of *Villadia*; and until we shall be able to examine personally the type-specimen of *Villadia* (Cotyledon) *parviflora* at Kew, a faint possibility remains that the oldest generic name of the two plants here pictured might have to be *Villadia*. On our last visit to Mexico we spent an entire day exploring Mt. Atzacualco near Guadalupe, without finding anything that might agree with the description of *V. parviflora*. We did find numerous plants of *Sedastrium ebracteatum* and *Altamiranoa mexicana*; could an abnormal inflorescence of either be the type of *V. parviflora*?

Difficulty was experienced in differentiating between the two species from Dr. Rose's descriptions and pictures. We take the liberty of offering the following contrasts:

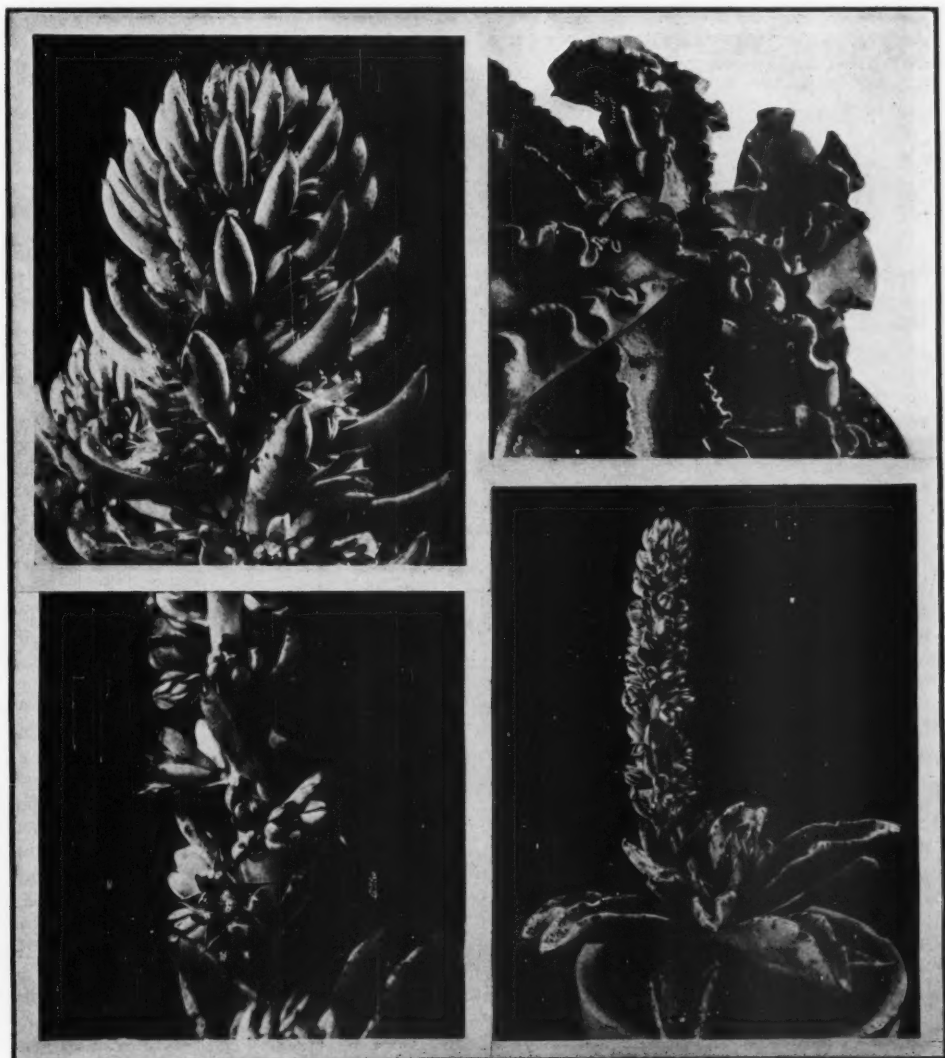
(*1: See CACTUS JOURNAL, Vol. 6, No. 11, page 165, figs. 1 and 2.)

A. Stem very short or none; basal leaves strongly undulate; inflorescence dense, its branchlets short; lower bracts many, upper distinctly flattened above; sepals free to base; carpels to over 7 mm. long.

T. minutiflora (Rose) Britton & Rose.

AA. Stem evident if short; basal leaves flat or simply concave above; inflorescence laxer, its branchlets elongated; lower bracts few, upper nearly terete; sepals united at base; carpels 6 mm. long.

T. platyphylla Rose.



UPPER LEFT: *Thompsonella minutiflora*; part of inflorescence, app. x 1.5.

UPPER RIGHT: *Thompsonella minutiflora*; leaf-rosette, app. x 0.75.

LOWER LEFT: *Thompsonella platyphylla*; part of inflorescence, app. x 1.5.

LOWER RIGHT: *Thompsonella platyphylla* Rose; flowering plant, app. x 0.4.

In cultivation these plants have proven most refractory, apparently being unable to cope with our damp and chilly winters. This need not surprise us, since both localities where we found them in Mexico are exceedingly hot and dry, and even there the plants seemed to seek the sunnier south slopes. In Mexico, of course, most rainfall occurs during the warm summer-months, and the cooler, even if frost-free winter, coincides with the rainless season.

We regretfully report the complete demise of all our plants of *Thompsonella minutiflora*.

However, plants of *T. platyphylla* might be obtainable from Mexican dealers. Both species are also very susceptible to attack from thrips and mealy-bugs, in fact we believe that the reddish coloration, mentioned by Dr. Rose, is the direct consequence of injury by either pest. The fleshy roots are mined, in Mexico, by the larva of a *Lycaenid* moth, which is probably their most serious enemy there. In Southern California, with its drier and warmer winter-months, cultivation of these interesting CRASSULACEAE should prove a much simpler task.

Identification

By E. C. HUMMEL

Whenever cactus enthusiasts and students of the CACTACEAE congregate among their plant, one is almost certain to hear, "Here comes Mr. Whosis, he can tell us what it is." And upon joining the group the important personage is apt to say, with very little inspection of the questioned plant and with no hesitancy, "Oh yes, that is so and so."

Please note, we speak of a congregation of earnest students of these plants, and no one able to identify the plant in question. Perhaps it is a little known species or on account of peculiarities in growth is not recognized by those present. Many times our Mr. Whosis is so far advanced in a knowledge of cactus nomenclature that he no longer takes it seriously and does this off hand labelling in the spirit of a practical joke, or to see how many present are interested enough to doubt his word. He little realizes that, among this group, may be beginners who, anxious to learn, may spread false information, the bugaboo that all true collectors fear.

Upon receiving a strange exotic specimen, only the most careful observation and checking can change the name from tentative to positive. Such matters as light condition and rate of growth may cause changes of character, which are most annoying obstacles when trying to make an accurate identification with the aid of a recognized authoritative work.

We have a plant, the identity of which has been the cause of many arguments with a cactus crony. We were thrilled one morning to notice a ring of tiny buds showing themselves in a crown around the top. This characteristic clinched our identification, *we thought*. We waited impatiently for the day when we could prove it. However, that anticipated pleasure was never experienced. In our desire to force the

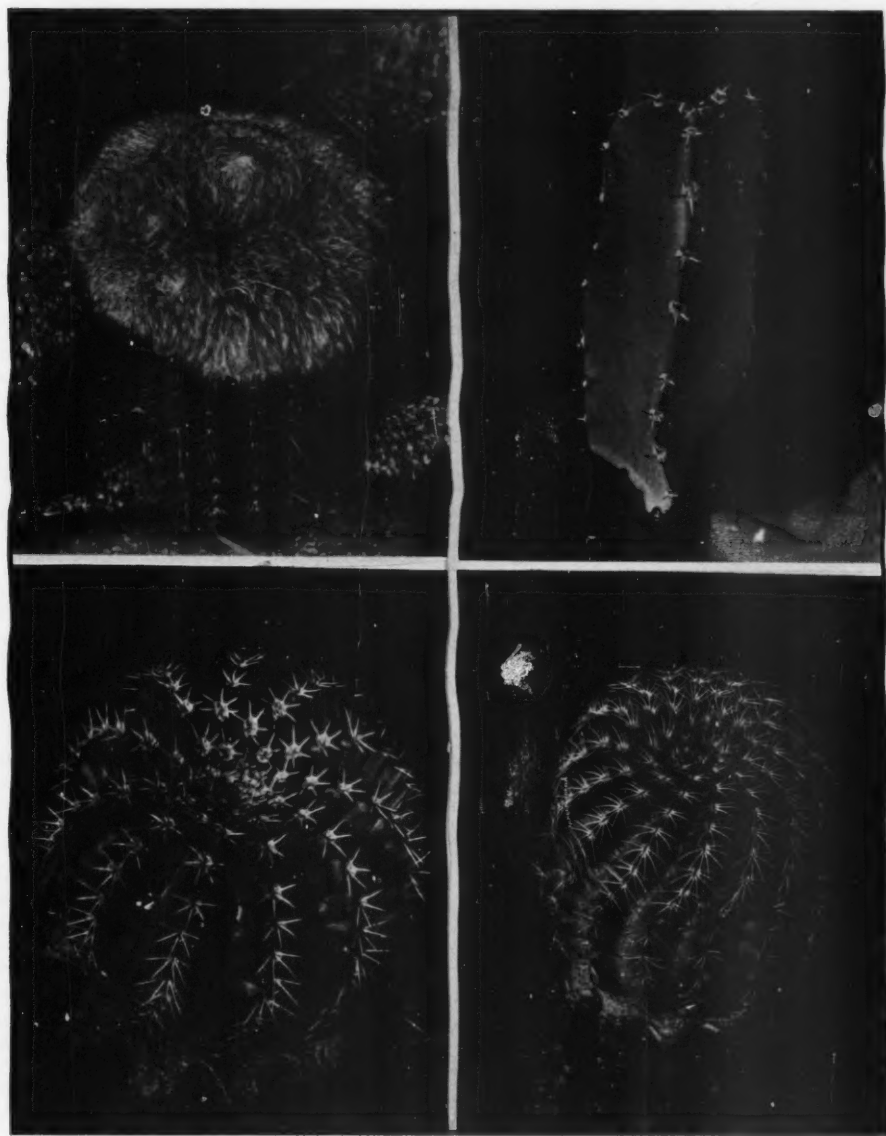
buds into early maturity, the extra care caused the plant to grow so fast that when the flowers finally opened they were half way down on the plant. Which, if we had allowed it to be known, would have proven to the satisfaction of our friend that we were in error. It proved nothing and we are still undecided as to the plants identity.

Has your wife ever requested you to stop at the dry goods store on the way home and get a spool of lavender thread? Nine chances out of ten when you arrived home you were surprised to have her announce that it was some other color between light blue and purple. If shown the material she was endeavoring to match, you probably informed her it was her mistake, it was decidedly not your idea of lavender. It is a recognized scientific fact that all eyes do not always make the same fine distinction between shades. This, together with the fact that a standard color chart is a luxury most of us cannot afford, is a decided drawback in using flower colors as a distinguishing botanical characteristic.

We have found in trying to determine the identity of a species that the best way is to make a full and minute description of the plant in question without any reference whatsoever to the description of the plant we believe it to be. In this way we overcome the very human fault of trying to make our specimen agree with that of the authority, whether it does or not.

In considering the seed pod as a help in identifying a species we must not overlook the fact that there is a possibility of hybridization and the changing of the outward appearance of the fruit to that of the pollen parent. We have noticed this in *Echinopsis* and *Nyctocereus* especially.

Mamillaria bocasana var. *inermis*? (unpub.)



UPPER LEFT: *Mamillaria bocasana* var. *inermis*.

UPPER RIGHT: *Pachycereus gaumeri*.

LOWER LEFT: *Echinocereus pulchellus*.

LOWER RIGHT: *Echinocereus amoenus*.

is one plant that as yet, has not been identified to the satisfaction of cactus fanciers. It is reported that it originated as a sport off *M. bocasana* in a green-house in Japan. This information may be erroneous. Among the hundreds of plants we have propagated none have ever reverted to the normal type species nor produced the characteristic red fish-hook spines. The plant closely resembles *M. albicoma* except that the flowers are like *M. bocasana*. Fruit is unknown. The rapidity of growth and ease of culture is remarkable and it may well become one of the most popular miniature cacti.

A noted case of misidentification is that of the plant pictured as *Pachycereus gaumeri*. This was in collections for years as *Cephalocereus gaumeri*. After studying the descriptions of the two plants we checked with the original plant which came from the Britton and Rose collection. Luckily the original identification number was still with the plant and by this means it was identified as a plant from one of three collections made by Dr. Gaumer for Drs. Britton and Rose, and tentatively called by them, *Pachy-*

cereus gaumeri. (See Vol. 2, p. 71 THE CACTACEAE).

To one unfamiliar with the plants, *Echinocereus amoenus* and *E. pulchellus* serve a very good example of what might be considered changes in the spines due to differences in lighting conditions. Backeberg and Berger both list *E. amoenus* as a variety of *E. pulchellus*. Britton and Rose, however, gives each specific standing.

To present a species in descriptive words for the benefit of posterity, can never be the work of any but a thoroughly trained botanist or a most meticulous student; a student, not only of botany, but of the intricacies of language. A short description in Latin followed by a more elaborate one in the native language of the author is the present method of plant description. There are already too many descriptions, so flexible that they can be made to fit any number of closely allied species.

By the way, have you checked your *Echinopsis multiplex*? Nine chances out of ten it is correctly named! Yet, it would be safe to say 99 percent of the owners have never identified it themselves.

Remarks by the Wandering Ecologist in the West Indies

Excerpts from his letters to the Assistant.

Nov. 5th. The trip out was awful—no sleep on the autobus because of having two more legs than are necessary for comfort on those short spaced seats. Left Phoenix in a rainstorm which continued into New York. Bus turned over at 1:30 in the morning between Globe and Miami, but so gently no one was hurt and in an hour we were on our way. Sail Saturday at noon—the unions willing.

Nov. 16th. Arrived this morning at Puerto Plata after a wonderful voyage, receiving a most cordial welcome from my hosts, Mr. and Mrs. Hurst. They have a wonderful collection of Cacti, Begonias, water plants, tropical fish, etc., which so far I have only had opportunity to give a casual inspection.

Their home is a marvel—a low, rambling building of mahogany, furnished with native made furniture of mahogany and cane. There is a central patio with a concrete floor, the roof open in the center; bed rooms back of the two spacious living rooms which are across the front of the house. Showers, baths, etc., adjoin each bed room and the back of the house contains two

dining rooms, one enclosed, the other open. The kitchen is a room modern to the last degree, but separate from the house proper and the servants quarters, which are beyond the kitchen.

The estate consists of about ten acres, all landscaped and with numerous native exotic trees, shrubs and vines well placed. The circular pool in front of the house blazes with color day and night as there are both diurnal and nocturnal lilies in it. A second pool contains lotus and native plants and a large pergola fronts this pool. Hibiscus and Coleus, both native, create a rainbow effect wherever you look, and ALL of the trees, palms, or otherwise, are covered with Orchids. Yesterday I saw miles of telegraph wire stretched almost to the breaking point by the weight of the Orchids growing on them.

Nov. 20th. It is unbelievable how slowly one has to work here. Boxes mostly have to be made and no one wants to hurry anything. Add to that the fact that it rains continuously for days and everything is too wet to pack safely and you will appreciate my state of mind. We have *Hylocereus antiquensis*, also a new one with "Roseta" flowers; *H. trigonus*; *H. triangularis*;

and another not yet identified. In *Selenicereus* we have *S. boeckmannii*; *S. urbanianus*; *S. humilis*; *S. coniflorus* (which is noted only from Mexico) and two more yet to identify. In *Harvisia* we have two, one possibly *H. nashii*, but not conforming to type, and another that is entirely different in growth habit, flowering period, flower size and details, etc.

The work is going much slower and at a greater cost than expected, but is bringing out some interesting facts. Matches are \$1.05 per box, so during the day I use my magnifying glass to light cigarettes, saving the matches for the night smoking. On the other hand meat is only 5c per pound, and gasoline only 38c per gallon—but then, one can have a suit tailored to measure for \$4.00. When I get home again I am going somewhere where I can be alone for days—here every act is watched with the mild curiosity usually accorded to museum freaks. I envy the goldfish who are comparatively free from public life say between 1 a. m. and 5 a. m.—even the process of bathing is more or less a public affair.

Nov. 24th. Monte Christi. Headquarters now located here and present indications are a dinner of Carne (tough), Frijoles, Arroz and Cafe, which seems to be the unvarying diet at

this largest and finest hotel in town (rates 25c per night CASH). The beds lack mattresses due to a ruling against them by the Sanitary Commissioner, who is probably right, but as a special favor, due to the immense influence of friends I am to have two quilts over my springs.

Nov. 25th. Was wrong about my Thanksgiving meal. After serving me a large bowl of thick and delicious soup I was still able to eat two eggs and a mess of fried Plantains. Refused two kinds of meat, several vegetables and the dulces and coffee, whereupon a great to do started. The proprietor seemed to think that I did not get the kind of food I wanted and numerous servants and cooks were sent to inquire what I would like to have specially cooked. My explanation that I had had sufficient was finally accepted with doubt as one of the eccentricities of the "loco americanos."

EDITOR'S NOTE: Anyone desiring plants from this locality may arrange for a part-share by writing promptly to J. W. Banks, 5232 York Blvd., Los Angeles.

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What Grows Where

Cacti Listed in Accordance With Their Geographical Origin
Compiled by Anne Smith, Santa Barbara, Calif.

U T A H OPUNTIEAE OPUNTIA

SUBGENUS 1. CYLINDROPUNTIA

Thurberianae Series

O. whippelli

Type Locality: About Zuni.

Distribution: Northern New Mexico and Arizona to southwestern Colorado and probably southern Utah. Also reported by Coulter in southern California, Lower California, and Sonora, but not to be expected there.

Echinocarpae Series

O. acanthocarpa

Type Locality: On the mountains of Cactus Pass, Arizona, about 500 miles west of Santa Fe, New Mexico.

Distribution: Arizona and California; reported also from Utah, Nevada, and Sonora.

O. echinocarpa

Type Locality: In the Colorado Valley near the mouth of Bill Williams River.

Distribution: Nevada, Utah, Arizona, California, and Lower California.

SUBGENUS 3. PLATYOPUNTIA

Basilares Series

O. basilaris

Type Locality: From Cactus Pass down the valley of the Bill Williams River.

Distribution: Northern Sonora, western Arizona, southern California, Nevada and southern Utah.

Phaeacanthae Series

O. angustata

Type Locality: Bottoms, Bill Williams Fork, Arizona.

Distribution: Recorded as extending from New Mexico to California, but known definitely to us only from central Arizona, perhaps extending north to Utah.

Polyacanthae Series

- O. erinacea*
 Type Locality: On Mojave Creek, California.
 Distribution: Northwestern Arizona, southern Utah, southern Nevada, and western California.
- O. rhodantha*
 Type Locality: Colorado, at 2,000 to 2,300 meters altitude.
 Distribution: Western Nebraska, Colorado, and Utah.
- O. polyacantha*
 Type Locality: Arid situations on the plains of the Missouri.
 Distribution: North Dakota to Nebraska, Texas, and Arizona to Utah, Washington, and Alberta, Canada.

CEREAE

SUBTRIBE 3. ECHINOCEREANAE

ECHINOCEREUS

- E. mojaveensis*
 Type Locality: On the Mojave River in California.
 Distribution: Southeastern California to Nevada and Utah, western Arizona, and reported from northwestern Mexico.
- E. octacanthus*
 Type Locality: Northern Texas.
 Distribution: Known to us definitely only from northwestern Texas, but reported by Coulter from New Mexico and Utah.
- E. coccineus*
 Type Locality: About Santa Fe, New Mexico.
 Distribution: New Mexico and Arizona to Utah and Colorado.
- E. fendleri*
 Type Locality: Near Santa Fe, New Mexico.
 Distribution: Texas to Utah, Arizona, and northern Sonora and Chihuahua, Mexico.
- E. engelmannii*
 Type Locality: Mountains about San Felipe, southern California.
 Distribution: California, Nevada, Utah, Arizona, Sonora, and Lower California.

SUBTRIBE 4. ECHINOCACTANAE

PEDIOCACTUS

- P. simpsonii*
 Type Locality: Butte Valley in the Utah desert and Kobe Valley, farther west.
 Distribution: Kansas to New Mexico, north to Nevada, Washington, Idaho, and Montana.

FEROCACTUS

- F. wislizeni*
 Type Locality: Donana, New Mexico.
 Distribution: El Paso, Texas, west through southern New Mexico and Chihuahua, to Arizona and Sonora and perhaps south along the Gulf of California into Sinaloa. Reported also from Utah, perhaps erroneously, and from Lower California.
- F. lecontei*
 Type Locality: Lower parts of the Gila in western Arizona.
 Distribution: Southern California along the Colorado, northern Lower California, Sonora, and east into Utah and Arizona. The geographic limits of the plant are ill-defined.
- F. johnsonii*
 Type Locality: Near St. George, Utah.
 Distribution: Northwestern Arizona, eastern California, western Utah, and southern Nevada.

ECHINOCACTUS

- E. xeranthemoides*
 Type Locality: Kanab Plateau on the borders of Utah and Arizona.
 Distribution: Extreme southwestern Utah and northern Arizona.
- E. polycephalus*
 Type Locality: On the Mojave River, California.
 Distribution: Nevada, Utah, western Arizona, southern California to northern Sonora; reported from Lower California.

SCLEROCACTUS

- S. whipplei*
 Type Locality: On the Little Colorado in Arizona.
 Distribution: Northern Arizona, southeastern Utah, and western Colorado.

UTAHIA

- U. sileri*
 Type Locality: Cottonwood Springs and Pipe Springs, southern Utah.
 Distribution: Southern Utah.

SUBTRIBE 6. CORYPHANTHANAE

CORYPHANTHA

- C. chlorantha*
 Type Locality: Southern Utah, east of Saint George.
 Distribution: Southern Utah, western Arizona, central Nevada, and eastern southern California.

C. arizonica

Type Locality: Northern Arizona.

Distribution: Northern Arizona, especially along the Upper River of the Grand Canyon, and perhaps also in southern Utah.

PHELLOSPERMA

P. tetrandra

Type Locality: San Felipe, California.

Distribution: Western Arizona, southeastern California, southern Utah, and southern Nevada; probably northern Lower California.

NEOMAMMILLARIA

N. microcarpa

Type Locality: "On the Gila, 3,000 to 4,000 feet above the sea."

Distribution: Southwestern Texas and Chihuahua to Arizona and Sonora; recorded from southern California and southern Utah.

VIRGINIA

OPUNTIEAE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Tortispinae Series

O. opuntia

Type Locality: In Virginia.

Distribution: Sandy and rocky places from Massachusetts to Virginia, the mountains of Georgia and central Alabama extending north into southern Ontario, Canada (Point Pelee), west in isolated colonies to northern Illinois, eastern Missouri and Tennessee, and long established in the mountains of northern Italy and Switzerland.

WASHINGTON

OPUNTIEAE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Polyacanthae Series

O. fragilis

Type Locality: "From the Mandans to the mountains, in sterile but moist situations."

Distribution: Wisconsin to central Kansas and northwestern Texas, westward to Arizona, Oregon, Washington, and British Columbia.

O. polyacantha

Type Locality: Arid situations on the plains of the Missouri.

Distribution: North Dakota to Nebraska, Texas, and Arizona to Utah, Washington, and Alberta, Canada.

CEREAE

SUBTRIBE 4. ECHINOCACTANAE

Pediocactus

P. simpsonii

Type Locality: Butte Valley in the Utah desert and Kobe Valley, farther west.

Distribution: Kansas to New Mexico, north to Nevada, Washington, Idaho, and Montana.

WISCONSIN

OPUNTIEAE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Tortispinae Series

O. tortispina

Type Locality: On the Camanchica Plains near the Canadian River.

Distribution: Wisconsin to South Dakota, Texas, Kansas, Colorado, and New Mexico.

Polyacanthae Series

O. fragilis

Type Locality: "From the Mandans to the mountains, in sterile but moist situations."

Distribution: Wisconsin to central Kansas and northwestern Texas, westward to Arizona, Oregon, Washington, and British Columbia.

WYOMING

CEREAE

SUBTRIBE 3. ECHINOCEREANAE

ECHINOCEREUS

E. viridiflorus

Type Locality: Prairies about Wolf Creek, New Mexico.

Distribution: Southern Wyoming to eastern New Mexico, western Kansas, western Texas, and South Dakota.

Notes from Minnesota

MRS. CLARA M. JELINEK

The past seasons I have kept a few notes on the blooming time and growth of my plants and thought you might be interested in same. I have raised most of my plants from seed and they are now about two and a half years old, though I have possibly fifteen of blooming size. I had about three hundred last Spring or about a hundred and fifty kinds. Being crowded for room I have given about half of them away, keeping about eighty kinds and some duplicates. It is not safe to put plants out before the first of June and they must be brought in by the middle of September, due to frosts, so you see our growing season is rather short unless one has a green house. I haven't.

The JOURNAL has helped me to identify some plants I have picked up here and there and the month goes all too slowly before the next copy arrives. It is a grand hobby, and a grand JOURNAL, and I wish to thank you for the pleasure it has brought.

1936

JANUARY—Cold, though sunny—Oh, you beautiful Christmas Cactus (*Zygocactus truncatus*). What do we care about the cold—you have brought me cheer all through the Holidays, though The Crown of Thorns (*Euphorbia splendens*) almost equals you with its bright green leaves and clusters of bright blossoms.—Wonder if there is anything new in the basement window.—No, everything is asleep—guess I will dampen the soil around the pots and brush these fat bodies with a soft brush. It will remove those little webs and particles of dried earth. There, how dressed up you sleepy children look.

FEBRUARY—Cold, Oh, so Cold.—I'll just take my magnifying glass and see how my plants are doing since their last watering. No sign of mealy bugs. Every plant stands nice and straight except this *Opuntia*. Wish I knew its name—four inch pads—a few long brownish black spines only on the top edge—soft brown glochids, evenly spaced. It is beginning to droop and wrinkle—I'll leave it and see what happens. WHAT IS THAT? Look at the buds—*Neom. plumosa* and *Neom. beyderi* are full. *Gasteria setata*, *Aloe variegata*, *Sanseveria*, and *Crassula tetragona* all budded. I wonder what the flowers will be like. You children are going to get a nice warm foot bath and a good sunny window. *Acanthocereus pentagonus* has new green tips.

Will wash you and give you the sunniest place so you will be thick and glossy.

MARCH—The door Bell—"Hello Myra—What are you doing out in this blizzard—don't you know it is thirty-eight below zero?"—"I came over to see if you would go for a hike, It is fun out." So on with the ski suit, pulled warm caps over our ears, and away we went. After four blocks our eye lashes were so covered with frost we could barely see. "Gee, it's cold, let's turn back."—Home again—how cozy, and what an amazing sight to see old Mother Nature on her winter rampage.—Snow six feet deep all along the fence and so cold. Wonder how my hardy cacti are holding out this cold weather. CACTI?—Must look at that basement window again. Why, look at all those new red, purple, and green spines. I shall have to get these plants in a sunny window right away—Here you go—up to the living room to join the others.

Neom. beyderi has forty-two blossoms—looks like a birthday cake. *Gasteria setata*, *Crassula tetragona*, and *Aloe variegata* blooms aren't much to brag about. (How ungrateful of me when they are doing their best to please). *Sanseveria* has greenish white flowers on a tall stem—not a very pretty color, but so dainty and what a sweet odor. In the dusky twilight one seems to feel an unseen presence all about.

APRIL—What wonderful strides my children are making in their warm sunny window. The leaves of *Nopalxochia phyllanthoides* are turning red.—Wonder if it will harm the buds to give it more shade. *Neobesseyia similis* has two blooms.

MAY—*Nopalxochia phyllanthoides* buds dried. Experience is a good teacher. I'll know what to do next time. The old leaf of *Epiphyllum oxypetalum* has two buds—I do hope they will develop, but we are moving to our lake home this week, sixteen miles away, and all my plants go along (about three hundred, most of which are two year seedlings). There the pots will be plunged in the garden or under removable glass houses. May 15th—All moved—not one plant harmed. Must not water now—too great a change from inside temperature to cool outside air. Danger of frost yet this month.

JUNE—*Epiphyllum oxypetalum* in bloom. Has just a few leaves on own root. A beautiful large

white flower. It began to unfold at six and was completely opened by ten-thirty. *Echinopsis eyriesii* is in bloom—also *Echinocereus reichenbachii* and another *Echinocereus* very much like *reichenbachii* except the spines are white and flowers have a purple pink edge fading to a white center. Would like to know its name.

Coryphantha vivipara and hardy *Opuntias* came through the winter without mishap. The *Coryphantha* has several dark pink flowers.

My first graft (*Echinocereus papillous* seedling on a thin, two inch high, *Echinopsis multiplex*) is a year old and you should see the difference.—The *papillous* seedlings, two years old, are about an inch in size while the graft is about five inches high, two or more inches thick, with five new shoots, four of which are larger than any of the original seedlings. The *Echinopsis* stock has almost disappeared.

JULY—Hot. This is our tenth day of heat. A hundred and six and over—no rain for three weeks and everything looks stunted or burned but not my cacti. *Cholla*, *Opuntias*, *Echinocereus* all in hot sun and doing fine—pots plunged—I water every night with warm water. *Opuntias* have doubled their number of pads—beautiful, fresh, and velvety.

Tried another graft—*Epithelantha micromeris* seedling on *Acanthocereus pentagonus*—looks O.K. Tried a wedge graft this morning using a four inch, thin, *Echinopsis multiplex* for stock and a piece of *Echinocereus berlandieri* for scion.

AUGUST—*Epiphyllum ackermannii* and *Dolichothele sphaerica* are blooming. *Echinopsis* has been in bloom all summer and still has many buds. Plant is about the size of a large egg. *Sanseveria laurentii* is blooming. Bright red seed pods forming on *Neom. beyderi*. More buds on *Echinocereus reichenbachii*. *Euphorbia splendens* kept on the north side of house, NOT plunged, watered seldom, is still in bloom and stems covered with fresh green leaves. *Neom. bocasana* has many buds and flowers. *Opuntia macrocalyx* and *Opuntia basilaris* have new pads on new pads.

SEPTEMBER—No mealy bugs or red spiders all season though the phlox and red cedar have their share of the spiders. They seem to prefer them to the cacti. Am watching with interest a *Coryphantha robustispinia* seedling two years old that seems to be a *cristate* or *monstrose* or both. It has four centers, three of which are points, the other center being a line, fan shaped.

Epiphyllum oxypetalum has another large flower. New grafts are slow. It is becoming late

so much water less now. Evenings are chilly. *Neom. beyderi* seed pods fed a field mouse.

OCTOBER—Back home—plants and all. No damage except to a *Cholla*. The Peke landed on top of it and his hair is bedecked with fat, sticky joints. Plants are again plunged in their south basement window. Watered twice this month.

NOVEMBER—*Hamatocactus setispinus* has just closed its last two flowers. We are all ready for winter now. Water only the ground in which pots are plunged. *Neom. plumosa* seems to have the seasons mixed—new buds are developing. Christmas Cactus is budded. *Stapelia variegata* is in bloom—its first flower this fall and it is three inches from tip to tip. *Euphorbia splendens* dropped a few of its leaves, but has buds on every tip, and *Gasteria setata* has a wee blooming stock just peeping out.

Thanksgiving—Thankful, yes, for the pleasures my plants brought me this past year, for the joy I have had in dividing my plants with others, and for the pleasures anticipated the coming year.

AN 89-YEAR-OLD ENTHUSIAST

A little account of a busy life may be of interest. I was eighty-nine years old last March, and have been blind for the past ten years. Some sixty years ago I acquired a small collection of cactus plants largely through Anna B. Nickels, of Laredo, Texas. In order to name these I secured a volume of the Pacific Railroad Report and one of the Mexican Boundary containing Engelmann's Report. The greenhouse in which the collection was stored was destroyed by a hail storm. Since that time I have never given any particular attention to the Cactaceae.

As one of the early botanists of the Chicago region, I collected and identified all of the flowering plants and ferns within fifty miles of Chicago. I made numerous exchanges with other botanists, the result being that specimens collected by me may be found in all of the large herbaria in the country.

Having exhausted the flowering plants I turned to the higher fungi. My reports upon these being published by the Chicago Academy of Sciences. Some years ago I gave my collection of flowering plants to the Illinois State Academy of Science. It now forms a part of the collection of the State University at Urbana, Ill. I gave my duplicates to the College at Naperville, Ill., and the collection of fungi to the Field Museum of Chicago.

My wife, Elizabeth Moffatt, and I always aided each other in our scientific work. She was an authority on the spiders of the Great Lakes Region, and brought some two thousand preserved specimens with her when we came to California. She developed and printed the numerous photographs and lantern slides which we made of plants, spiders and insects. She still does everything possible to make life comfortable for an obsolete octogenarian.

WILL S. MOFFATT.
Los Angeles, Calif.

Collecting Cacti for Herbaria

By LOIS CHAMBERS TAYLOR

A student who undertakes a systematic study of the CACTACEAE is immediately dismayed by the lack of herbarium material available for examination. It is true that at the present time there are a number of gardens containing many representatives of the family. But too often the specimens in private gardens are not accompanied by adequate data. Furthermore, plants may change considerably under garden cultivation. Aside from these considerations it is usually financially and temporarily impossible for the student to travel about visiting gardens at will. A good available herbarium collection, on the other hand, would make it possible for him to conveniently make a comprehensive study of the family, since herbarium sheets may be loaned by institutions and individuals to the student.

This is in no way intended as a disapprobation of garden collections or garden study. No serious student of botany would venture far in his study without making extensive observations of living material, both in the field and under cultivation. This is particularly necessary with such a variable group as the CACTACEAE. Extremely valuable information is to be derived from botanical gardens where data is accurate and complete; and where conditions of soil and weather are scientifically checked.

It is therefore impossible for a student to see as many living specimens as he needs for careful consideration. Herbarium sheets offer the next best means of study. Herbaria have been in existence since the time of Cesalpini in the sixteenth century and since then herbarium collections have been of infinite aid to systematic botanists.

And yet when one comes to look at some of our greatest California herbaria the CACTACEAE material is sadly lacking or scanty at best. Even the local state species are most incompletely represented. This lack involves a double fault: first, most professional botanical collectors have little patience with our spiny pets and second, few amateur cactus enthusiasts dare venture on the sacred rite of preparing herbarium specimens.

Because I feel this need of good material so greatly and because I believe that the best material will come from those who are really interested in cacti, I shall offer a few suggestions for

the preparation of cacti as herbarium material. It is not very difficult to make good herbarium sheets of cacti. Patience, care and common sense are the principal prerequisites.

Little equipment is necessary. The first requirement is a field note book; I find most satisfactory a 3x5 loose-leaf type. The next essential is a botany press which may be purchased or made with little expense. The press should be equipped with two straps and a carrying handle. Be sure your press is near the customary size for herbarium sheets (12 by 18 inches). Newspapers are most universally used as collecting sheets; these folded once should be neatly trimmed to size with a paper cutter or large shears. You will need for dryers, pieces of roofing felt cut to fit your press. Be sure to have enough extra dryers to allow for a complete change each day, and more in damp weather. One also needs a large butcher knife, a table spoon and a strong pair of iron tongs. A small quantity of naphthalene crystals is sometimes useful.

In choosing a specimen to collect one should select the plant which appears to be most typical of that vicinity. If there is much variation in one species of that locality, separate collections should be made.

Having selected our prey take the field note book and put down the data. Each collection has a chronological number. If you are in the habit of numbering your garden collections, the same number you put on field note book and collecting sheet should go on your garden specimen of this plant you are collecting. This will serve as a living control and will teach you much about changes which occur under cultivation. Each plant collected should have a separate sheet of the note book so that they may be filed with the same numbers in our garden catalogue.

Now put down in the notebook the date. Next write the exact geographical location. Be careful to identify common place names like "Cottonwood Springs." Avoid using perishable names such as those of ranches and mines. Next write down the altitude, if you approximate that, indicate it so. Then put down the exposure, soil conditions, and any other ecologic factors which appear to you. Also include in your notes a list of associated plants which you may recognize. It is well to make notes of the appearance and habit of the plant you are collecting. Note color

and size of the plant as a whole and its parts. Simple sketches often are most useful to recall habit of growth or some significant posture. A photograph of the habit is an excellent record and may be filed with the other data under collection number. If there are seeds on the plant they should be collected in a 3x5 envelope and filed with all other data under the same collection number.

Now take a folded sheet of newspaper and write the number on the lower right hand corner. Along the lower margin write the place, date, and your name. Now we must select the material to be cut. The object in selection of material is to get the best representative material to fit the collection sheet. Always keep in mind the idea that this material is to be used to determine some systematic problem. Choose first a mature phylloclade* or a group, if they are small. Then select a juvenile phylloclade; in the case of *Opuntias* get one with leaves still on, if possible. Always remember to collect the mean type for the locality. If the material is small so you will have room on the sheet, collect also the extremes. Next we want a flower. Always collect two or more flowers if possible, and get them in different stages of development. And next, collect the fruit. In collecting the flower we are sometimes able to collect and cut it directly on the phylloclade; sometimes not. But always try to display in your specimen the origin of the flower on the plant. When it is feasible collect the root system or a piece of it.

In the case of small round types of cacti take the whole plant. In collecting the very large cacti such as *Carnegie gigantea* more ingenuity has to be used in getting representative material. Sometimes a thin cross section of the stem may be taken, and is often useful. Portions of the ribs with areoles showing spine arrangements are usually not very difficult to obtain. Fruit and flowers should, of course be obtained when possible.

The actual preparation of cacti must be considered according to the various types. We shall consider first the *Platyopuntias*. Grasp a phylloclade with the iron tongs. Then cut along the narrow edge with a sharp knife and split the phylloclade. Upon the cutting of the phylloclade with a flower attached, the same process is followed; cut the flower last, splitting it exactly

in the middle. If the phylloclade is at all fat, scoop out most of the pulp, leaving only the skin and fibres. Now we are ready to put the material in press. Place it on the sheet and put a dryer on each side of the folded sheet. When pressing flowers attached to the phylloclade, the best results are often obtained by padding the material, around the flower especially, with small pieces of newspaper or dryer. When the flowers are separated from the plant it is usually better to dry them on a separate sheet.

The small globular cacti are most easy to prepare by quartering them from crown to roots. This same technique may be employed with any cylindrical forms which are large and juicy. The inner pulp is then neatly sliced out leaving only the skin with a little flesh. These are then pressed flat but may be reconstructed to give the exact shape and size of the plant for later observation, since the whole plant is preserved. Thinner types of cylindrical cacti may be cut in half and some of the insides scooped out or may even be pressed whole.

Dry fruits should be preserved whole. Juicy fruits are usually best preserved by halving and pressing; they should be well padded with bits of blotting paper.

Dryers should be changed at least once a day. The best kind of heat to use is hot air, warmed by the sun. It is better not to leave the plants in the direct sunlight, but under a tree or an awning or porch in the warm air. When sun heat is not available the next best thing is artificial heat. Here again plants should not be subjected to direct intense heat but should be set at a little distance away where they are constantly in warm air. When heat is lacking, dryers should be changed very frequently, as often as three times a day. And often when drying is slow, a small quantity of naphthalene crystals sprinkled over the cut surfaces will help prevent the growth of molds which have a strong tendency to develop on this unusually moist cactus material. Look over all material in press at least once each day and check any mold immediately with naphthalene. Straps should be loose at first and tightened as fast as the water in the material evaporates. Be sure that your material is thoroughly dry before it is taken from the press.

EDITOR'S NOTE: *This is the first of a series of articles by Mrs. Lois Taylor of Berkeley, Calif., where she is completing her studies for a doctorate in botany at the University of California. The first article will describe recent explorations of the islands off the coast of Baja California.*

*The term phylloclade is used in preference to joint, internode, node or stem. It is a more exact term, both morphologically and philologically.

Names of Plants

By J. W. BANKS

Many who are interested in the collecting and growing of Cacti object to the use of the binominal, or two-name system on the grounds that it is too cumbersome and too hard to remember. Others object to the use of the Latinized form of names used, and both classes prefer the usage of common names. There are ample reasons for using the Latinized, bi-nominal system, and when it is properly understood it does not present much of an obstacle even for the beginner. The principle reason for its use, however, as you will see, is necessity.

No one has any particular difficulty in distinguishing between the nations of the earth, neither do their names present any strain on the intellect. Familiarity with the names of these has been acquired by usage, and just so it is with this system of naming plants. All the Nations belong to the one great Family, but there are various Nations, or Tribes, which bear distinguishing names. Cacti, too, belong to one great Family and is segregated as a Tribe in the same manner.

Within the Nations we find further segregations into units bearing distinguishing names, yet we experience no great difficulty in identifying the Smiths from the Jones or the Browns. And going further into this divisional system, we do not have any difficulty in distinguishing Frank Smith from John Smith or Bill Smith, and so on indefinitely. This ability to identify the family and its various members comes with familiarity or acquaintance. Just so it is with the names of the genera and species of cacti. The generic name is the Smith name, and Frank, Bill, or John is the species* name.

As for the use of the Latin terms and Latinized names, scientists in all branches have always found it necessary to use this system. Botany is a science, in which Cacti is embraced, and its ramifications are not confined or limited to the English speaking peoples. International usage thus demands that a language that has the same meaning in every land be used in order that the meaning will be exactly the same, no matter where used. Latin, a dead language, one which never changes, is the ideal medium, hence its adoption.

The use of the bi-nominal, or two-name, system, is equally essential. To understand this clearly it is necessary to consider the matter in a more or less historical light. In 1753, when

Carolus Linnaeus published his work "Species Plantarum," he recognized and recorded only 22 species of cactus. Probably owing to their spiny exterior he classified these as "thistles." The tall growing varieties were named "torch-thistles" or "candle-thistles," but the shorter, more or less globose forms were labeled "melon-thistles."

From the time of this publication the steady flow of new plant material from the Americas continued until it became necessary to publish new lists of additional species, covering those which had not been known or listed by Linnaeus. By 1819 the list had only grown to 45 in number, and in 1826 only 94 species were recorded. But by 1828, in which year was published De Candolle's "Prodromus," the family had grown very considerably and he described 183 species, which he divided into seven genera.

In 1840, only 12 years later, Paxton's "Botanical Dictionary" recorded 400 species, which was further increased by Laboreaux in his "Monograph of Cacti" to 670 species.

One can readily understand that this rapid increase in the number of species necessitated a change from the simple naming system used by Linnaeus long before this. The discovery that there were distinct "genera" embodying similar characteristics, which could be grouped, led to the further necessity of considering the variations with the groups, and for convenience sake, at least, these had to be segregated into "species" and were so published.

In 1898 there was published by Karl Schumann a monograph on Cactus, which at that time was considered a very modern systematic work, in which he divided the Family into three Tribes:

1. PERESKIOIDAE (Pereskia)
2. OPUNTIOIDAE (Opuntia)
3. CEREIOIDAE (Cereus)

In this monograph he recognized 21 genera, dividing the *Cereus* into two Tribes; *Echinocactus* and *Mamillaria*, and this system has, until recently, been the guide for at least the European peoples.

In America (1919-1923) N. L. Britton and J. N. Rose, under the auspices of the Carnegie Institution, prepared and published four vol-

*Species is always the same for one plant or several, with no difference in the singular or plural.

umes, profusely illustrated, and containing descriptions and other pertinent matter, entitled "THE CACTACEAE." In these volumes there were recorded and described some 125 genera embracing over 1200 species.

With the enlarged field before Schumann's contribution, it was impossible to continue under a system using a single name. It was necessary, to be comprehensive, to use a bi-nominal, or two-name system; the one to establish the genera, the other to indicate certain described variations within the genera, called the species.

Descriptive names, consisting of several words, were for a time used, but these were too unwieldy and it was found expedient and more suitable to use proper names as the specific name, thus not only simplifying the system, but also honoring certain botanists who had labored diligently in both physical explorations and technical research.

Every generic division is made on a definite difference in plants—every specific division is made of the members of the generic division whose general characteristics are similar but which have varietal distinctions. Minor differences, such as spine color variations, do not constitute grounds for making or naming a new species. These variations are merely noted, if at all

specifically considered, and if named at all are distinguished by adding "variety _____" to the accepted bi-nominal term in use for that particular plant.

If the form of the plant is of an abnormal shape at the top, growing into a fan-shaped or in a wavy serpentine fashion, contrary to the normal form, to describe this abnormality we add the term "crestata" (kress-ta-ta), which merely indicates that it is a crested form of that particular genera and species.

If the abnormality extends to the whole stem of the plant and completely breaks up its regular form into a lumpy, irregular form, we use the regular name of the genus and species to which it belongs and add the word "monstrosa" (mon-stro-sa or mon-stro-sus).

We favor and advise the cultivation of an acquaintance with your plants and the use of the correct name whenever possible. Usage and familiarity with the names and terms will soon develop a vocabulary that will, without doubt, be valuable and helpful.

To illustrate the advantage of doing this, the necessity for having a bi-nominal system, and the simplicity of the system, let us consider a few common names now in general use:



LEFT: *Carnegiea gigantea cristata*. The young man is G. A. Frick, photographed before he launched "The Euphorbia Review." BELOW: An *Opuntia* crest. *Cereus peruvianus monstrosus* is well known to all readers.



RAT-TAIL CACTUS

Proper name *Aporocactus* (A-poro-cactus)

There are only five species in this genus, all of which, while very similar, differ in some vital point. If you are a systematic collector (having completed selected genera whenever possible before selecting another genus) and had four of the species under this genus and was anxious to secure the fifth and complete the genus, how would you indicate your requirements under a single or common-name system? On the other hand, if you were a user of the bi-nominal system, you would have no difficulty in making your wants known either in America or abroad.

NIGHT-BLOOMING CEREUS

(the common name usually applied to *Nyctocereus serpentinus*—which every student and collector knows.)

Your difficulty here would be even more extreme for this is a common name used for literally dozens of nocturnal, or night-blooming, plants.

FISH-HOOK CACTUS

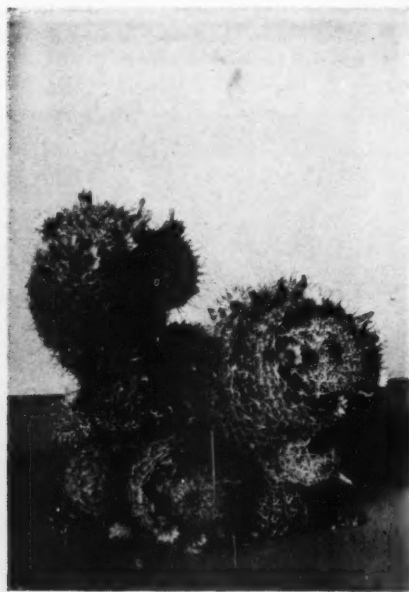
One has only to check over the list of known "fish-hook Cactus" and note the many plants embraced under this very common name to recognize its limitations and the advantage of using the bi-nominal system. There are so many plants in various genera that your term "fish-hook"

could mean that you rcorrespondent would be very much at a loss to know which plant you really desired. An order for *Mamillaria dioica*—the plant generally called "fish-hook" here in the West—might be filled with a *Sclerocactus*, a *Ferocactus*, an *Ancistrocactus*, or with one of several other genera, and you would receive a "fish-hook," but not *Mamillaria dioica*.

Let us consider this problem from the angle of using the bi-nominal system. Let us assume that you wish to add to your collection certain species. You are interested in *Thelocactus*, and the species desired are both the two—and three colored spine varieties. For the first you would simply use what in reality is a plant description; the genus, *Thelocactus*. To designate the kind of *Thelocactus*, you merely add the name of the species: "bi-color" (two-color-descriptive of the spine color). If you wish the plant with the three colors of spines you would merely add the word to designate this fact; "tri-color." (three-color). These two and three word designations would be understood wherever cacti are collected or propagated, no matter from what nation or from what corner of the world you might order them.

Should the particular genus and species have known crestate or monstrose forms and you wish these, the same system is used, and by merely adding one additional word, "crestate" or "monstrosa," you are assured of receiving that particular plant you desire.

These examples should be sufficient to indicate the DISADVANTAGE of using a single common name to designate your plants. However, if it is more convenient for you to begin your collection and so name them, use the common name system. BUT, make it a practice to also put on the same label the proper name of the plant, using the bi-nominal system. We venture to prophesy that it will not be very long before you forget to put the common name on the label.



Mamillaria dioica

EDITOR'S NOTE: Too much emphasis may have been given to "Nomenclature," but those who at first scoffed at the complexity of names usually become staunch advocates once the plan began to unfold. The author of this article, who claims to be a "rank amateur" promises to discuss in simple words the qualifications of the various genera, but in order to be understood, some of the terms must be explained and then learned. Next month sketches will be furnished with his article in order to make it readable for the beginners who, after all, constitute the majority of Succulent enthusiasts. A word of appreciation or suggestions to Mr. Banks will be appreciated by your Editor.

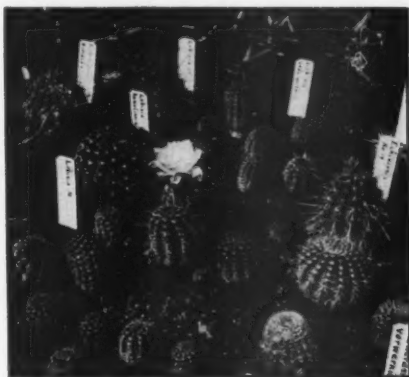
Lobivia shaferi and *Echinopsis ancistrophora*

By E. S. GOURLAY, *New Zealand*

Amongst the collection of cacti sent from South America by Herr Harry Blossfeld were the above two species which had been identified in the field provisionally as *Lobivia andalgalensis* and *Lobivia* sp. No. 37, respectively. These plants were a part of the first consignment of cacti despatched to New Zealand by Herr Blossfeld and their tribulations are perhaps worth recounting. They were collected in the region about Jujuy in the Argentine in June and were then despatched early in July to a forwarding agent in Buenos Aires with instructions to post the plants at the earliest opportunity. His interest in collecting further cacti for the shareholders of the expedition held the attention of Herr Blossfeld for some time and on visiting Buenos Aires two months later he discovered that "mañana" had prevailed—the cacti were still packed and awaiting despatch. Another agent with more businesslike methods was engaged and the plants duly set out in September on their long voyage to New Zealand, via Cape Horn and San Francisco.

On the 18th of November the boxes were finally opened in New Zealand and to the surprise of the recipient only 15% of the plants were dead, truly an astonishing instance of the ability of cacti to withstand the most rigorous of treatments. Some comparatively large plants had succumbed, but small specimens of *Lobivia shaferi*, a little under half an inch in diameter, were still green, though greatly shrivelled. With the exception of only a few of the cacti all recovered when placed in a seedling bed with overhead shading and in a fortnight had plumped up considerably. Progress from then onwards was miraculously rapid and by the end of two months the plants, which by then were exposed to the full sun, appeared as though they had never left their native habitat. When some of the plants commenced to develop buds the interest in them was indeed a daily one, until both *Lobivia shaferi* and *Echinopsis ancistrophora* blossomed within a few days of one another in the first week in March; it was then that Britton and Rose was consulted and the final determination was made.

Among the plants was a variety of *Lobivia shaferi* in which some of the radial spines and all the centrals were black, and the longer of the centrals was much longer than that of the typical plant. The flower is of a truly funnel-



form shape and is not quite as represented in Britton and Rose while the colour is a clear uniform yellow, altogether an attractive addition to any cactus collection. No attempt at pollination was made with either *L. shaferi* or *E. ancistrophora*, although the European bumble-bee (*Bombus terrestris*) visited the former in an abortive attempt to secure nectar. The flower of *L. shaferi* lasted for two days while those of *E. ancistrophora* were dead on the second day.

"THE CACTUS BOOK"

by Dr. A. D. Houghton,

President Emeritus of The Cactus and Succulent Society of America, Inc.

This first cactus book retains the lead in sales of any other book on the subject since its first publication date in 1931. The following book review of the Royal Horticultural Society explains its merits.

"This little book of 137 pages and 18 illustrations will reveal so many good and unusual qualities that, for anyone wishing to begin at the bottom and learn how to appreciate and grow good cacti, it would prove a bargain.

"It would be a good idea if every incipient gardener were obliged by law to pass an examination in the contents of this book before he began to talk about flowers. The writer has a very pleasant way of explaining every point as he goes along. Listen to this: 'Species is both singular and plural; you may say 'one species' or 'ten species.' The word 'specie' has no place at all in a discussion of plants; it refers only to gold.'"

"The directions for seed-raising, grafting and planting are clear, brief and thoroughly practical and simple to carry out. There is a chapter on crested, variegated and monstrose forms; another on labelling, cataloguing and literature—equally good. A conspectus of desirable species fills 30 pages of small print.

"The book is well printed, remarkably free from errors and a splendid example of the masterly treatment of a great subject in a small handbook."

An Incubator for Cactus Seeds

By PROFESSOR DR. FRANZ BUXBAUM, Furstenfeld, Steiermark

Translated by DR. R. W. POINDEXTER

Heating arrangements for the cultivation of cactus seedlings have usually the defect that they must be constantly watched to prevent the temperature from going too high or too low. Besides this they usually dissipate too much heat so that they are too expensive to operate.

My automatically regulated apparatus is free from these defects and several growers who have built one are extremely pleased with it. Therefore it should also be interesting to cactus fans in the northern portions of America.

The incubator consists of an outer box of wood. Within this at a distance of 2 cm. is an inner box, constructed at the top with a paraffine-soaked wooden rim with the lower portion formed from sheet zinc, and having only the upper rim connected by an airtight strip with the outer box. This top rim lies $1\frac{1}{2}$ cm. lower than the top of the outer box. This permits the optional use of either one or two sheets of glass as a top cover and the double glass, with dead air space between, can be used in cooler weather.

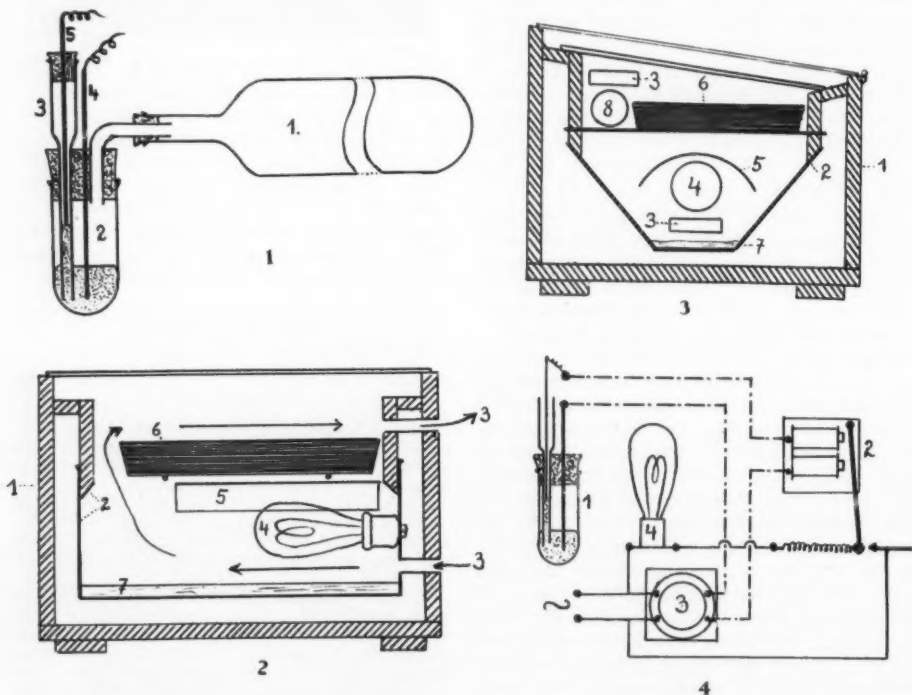


FIG. 1. The Regulator: 1. air-chamber, 2. Mercury vessel (mercury indicated by dots), 3. adjustable-contact tube, 4. fixed contact wire, 5. adjustable contact wire.

FIG. 2. Longitudinal section through incubator: 1. outer box, 2. inner box, 3. air openings, 4. heating lamp, 5. sheet metal shield, 6. seed tray, 7. water. The arrows indicate the direction of air circulation.

FIG. 3. Cross section through the incubator: numbering same as for Fig. 2, 8. air-chamber.

FIG. 4. Diagram of electrical circuits: ——— line voltage, low voltage (through transformer), 1. regulator, 2. relay, 3. transformer, 4. socket.

The sides of the inner zinc box are inclined inward, making the bottom narrower than the top. This makes the heating chamber smaller and the insulating space between the boxes larger than it would be with vertical sides. Openings for air circulation are provided at the ends, the space between the outer and inner boxes being bridged by sheet zinc tubes at these points. One of these openings lies about 3 cm. above the bottom of the inner box, the other at the highest point of the inner box. These air openings are provided with sheet metal slides on the outside box, by which they may be closed. The space between the outer and inner boxes may be packed with diatomaceous earth, sawdust, or similar material if desired.

Two stout galvanized wires are placed across the inner box at points about 5 to 6 cm. below its upper rim in order to support the seed tray, which is made from paraffined wood. From these wires is hung a sheet metal shield to prevent the rays of the carbon filament lamp, used as the heating element, from reaching the seed tray directly. This shield extends to the end carrying the air ventilators and is of semi-circular cross section. This arrangement directs the air circulation over the lamp, and provides an even heat throughout the apparatus. Besides the seed tray lies the air-chamber of the thermo-regulator, extending almost the entire length of the apparatus. This air-chamber is constructed of glass or of sheet copper and is narrowed at one end to a smaller tube which extends through the double wall of the apparatus for the outside attachment of the thermo-regulator itself. The latter consists of a bell transformer, a relay and the actual regulator, and these are attached to the outside of one end of the incubator.

The regulator is a glass vessel about 6 cm. long by 2 cm. diameter, tightly closed at the top with a well-fitted rubber stopper. Through this stopper passes a tube, bent at right angles and entering the air-chamber air-tight through a second rubber stopper; a vertical adjustable-contact tube, widened above for the reception of another rubber stopper carrying the adjustable contact of heavy copper wire; and a fixed contact wire extending nearly to the bottom. The regulator is filled $\frac{1}{3}$ full of mercury.

When the apparatus is in operation, the air in the air-chamber expands, and this forces mercury up the adjustable-contact tube till it completes a low voltage circuit including the bell transformer and the relay. This actuates the relay to open the high voltage circuit and shut off the lamp. As the apparatus cools, the air con-

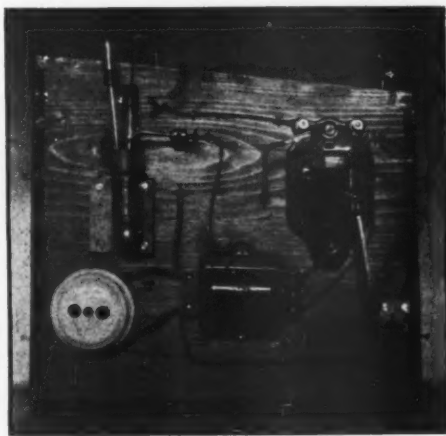


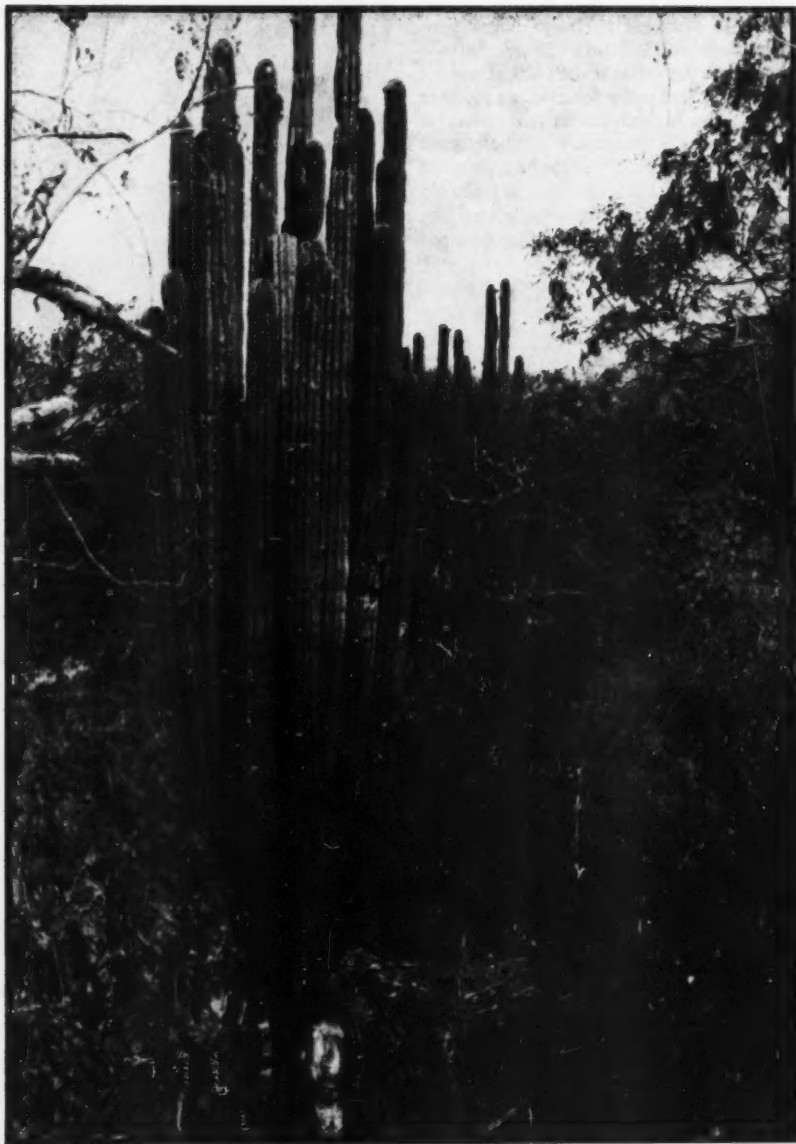
FIG. 5. End view of incubator showing regulator.

tracts, the mercury in the adjustable-contact tube sinks, breaking the relay circuit and permitting the relay to again close the heating circuit by means of a spring.

The relay may be made from an electric bell. It consists of an electro-magnet, to whose armature an extended arm of insulating material is fastened. This arm carries a platinum contact point at its end, arranged to contact a platinum pointed rod and completes the heating circuit except when the relay is activated by the thermo-regulator to break it. A spring must be provided to oppose the pull of the relay armature.

A thermometer is inserted between the double walls of the incubator. The regulator is then adjusted by moving the adjustable-contact wire downward till it meets the rising column of mercury at the instant the desired temperature is indicated. The adjustment should be checked up during the first hour or two of operation, after which the apparatus can be depended upon to operate for weeks at a time without attention. We must take care, however, that at least 1 cm. of water is at all times kept in the bottom of the inner box in order to maintain the necessary moisture of the air.

I can recommend maintaining a temperature lower at night than during the day in case particularly difficult seeds have been planted. This variation in temperature improves germination in the case of many species. It is by no means a necessity. I secured the best results with most species at a temperature of 30-35 degrees C. (86-95 degrees F). But according to my experience, species from the higher mountainous regions do better without heat.



Pachycereus grandis Rose near Cuernavaca, Morelos, Mexico. The upper parts bear the spiny, globular fruit of the species. Compare the size of the giant plant with the two persons standing at its base. Photograph from Miss Helia Bravo, H., Biological Institute, University of Mexico.

NEW YEAR APOLOGIES

To Mr. Paul C. Standley, Field Museum of Natural History, Chicago, Ill. Your kind words are appreciated even though they may have been credited to an unfamiliar name.

To Mr. E. C. Hummel who IS a member of the Neomenclature Committee and to whom we look for valued assistance in this momentous work.

Mr. Hummel hopes that Mr. Marshall succeeds in bringing back some of the "Native Exotic plants." Wm. T. M. you know better!

To G. F. Anton for "following his copy" even though your Editor knows his "yards of dirt."

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Before our disaster I had a large rock garden in which I had arranged all of my Cactus collection of around 200 pots full of Cactus, some were in bloom, one large *Opuntia U. S. 26* had 25 large buds on it. We have a large 2 story barn and the upper floor I had fixed into a museum in which I had my Shell, Fossil, Geode, some mounted Birds, Bird's nests, Curios, Books, some stamps, etc. The barn was covered with vines, and all around was flower beds of fancy dahlias, cannas, etc. The first thing we knew last week on Friday the entire barn was afire and we lost everything. The heartbreaking part to me was that the heat fried my entire cactus collection and I lost everything. I had plants that were from 6 to 10 years old and beauties, and now they are shriveled up. Our barn was large, but very nice. The fireman that fought the fire said it was the hottest fire they ever fought. Of course everything was so dry from the drought here this year. We had nice cherry trees, plum, pear, and they are blasted. In a couple of months I hope to be cleared up, but it will take a long time to replace my cacti.

PROF. ARTHUR BLOCHER.

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